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(54) HIGH TENSILE STRENGTH NON-ORIENTED SILICON STEEL SHEET AND ITS PRODUCTION

(57)Abstract:

PURPOSE: To produce a non-oriented silicon steel sheet combining excellent mechanical properties and magnetic properties so as to withstand stress at the time of rotation or a change in stress at the time of acceleration-deceleration and used as an iron core material for the rotor of a rotary machine.

CONSTITUTION: In the production of a non-oriented silicon steel sheet, steel contg. $\leq 0.05\%$ C, 2.0 to $< 4.0\%$ Si, $\leq 2.0\%$ Al and $\leq 0.2\%$ P and contg. one or two kinds of Nb and Zr or one or two kinds of Ti and V in the range of $0.1 < (\text{Nb} + \text{Zr}) / 8(\text{C} + \text{N}) < 1.0$ and $0.4 < (\text{Ti} + \text{V}) / 4(\text{C} + \text{N}) < 4.0$ is subjected to hot rolling and in thereafter coiled at $\leq 550^\circ \text{C}$ to regulate the ratio of the unrecrystallized part into $\geq 40\%$ and the average grain size in the unrecrystallized part into $\leq 60\mu\text{m}$. After cold rolling, the steel sheet is subjected to finish annealing at 700 to 900°C .